

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-46 (Canceled)

47. (original) A method of forming a silicon oxynitride film on a polysilicon film, characterized by the steps of:

forming plasma containing therein atomic state oxygen O* and hydrogen nitride radicals NH * in a processing vessel of a microwave processing apparatus, said microwave processing apparatus including, in addition to said processing vessel, a shower plate provided in part of said processing vessel so as to extend parallel with a substrate to be processed, said shower plate including a number of apertures for supplying a plasma gas toward said substrate to be processed, and a microwave radiation antenna provided such that said microwave radiation antenna emits a microwave into said processing vessel through said shower plate, said plasma being formed by supplying an inert gas predominantly of Ar or Kr and a gas containing oxygen as a constituent element and a gas containing nitrogen as a constituent element into said processing vessel via said shower plate, and by supplying a microwave into said processing vessel from said microwave radiation antenna through said shower plate; and

oxynitriding, in said processing vessel, a surface of said polysilicon film formed on said substrate by said plasma, to form said silicon oxynitride film.

48. (original) A method of forming a silicon oxynitride film as claimed in claim 47, characterized in that said gas containing nitrogen and hydrogen is an NH₃ gas.

49. (original) A method of forming a silicon oxynitride film as claimed in claim 47, characterized in that said gas containing nitrogen and hydrogen is a mixed gas of an N₂ gas and an H₂ gas.

50. (original) A method of forming a silicon oxynitride film as claimed in claim 47, characterized in that said plasma has an electron density of 10^{12}cm^{-3} or more at said surface of said polysilicon film.

51. (Canceled)